

Education in Little Rann of Kutch

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1 Introduction

Kutch is the Desert area in the state of Gujarat. The salt farmers move to the desert (Rann) each year at around October to commence salt farming, the whole family moves to the Rann to farm salt. The extreme climate and the nature of salt work significantly impact the quality of life in the region. The quality and availability of education to the children significantly impacts the opportunities available to them.

2 Aim

To make education meaningfully accessible to the community of salt farmers in the Little Rann of Kutch. The challenge is to establish a system that could help implement the spirit of Right to education in a region where the existing system fails to deliver.

3 Field Visits

The first field visit was centered around the assumption that the remote area would have significant networking issues; this, however, was proven wrong as the region had good 4G network connectivity. The initial field visit showcased a digital divide in the area. The second visit was conducted keeping the children and education as the prime focus. I met a local government school teacher and a private school teacher who explained the situation in great detail. Attempts to talk to other teachers failed as many had not returned from the vacation. The school was closed at the time too, limiting my understanding of schools; though I was able to see a classroom as the village school was open for cleaning. There were no salt farmers in the Rann as the farming season had ended. Most of the members of School Management Committee (SMC) were not available; the interaction with the head of SMC resulted in no new significant information.

Next, I went to a part of Kharaghoda village that houses the salt farmers. I conducted a little drawing activity with around 15 primary school children (class 4 to 8) to build rapport and to understand what pictorial associations they hold with common words. For example, studying was largely associated with school and chalk and board. Speaking was associated with birds and groups of kids, etc. When I asked children about their preferred means of education, 90 percent of kids chose ICT over chalk and board. The interviews had several limitations like that of time, language (communication was made easier by the help of a local) and lack of team members. My gender may also have prevented a free communication with the girls in the area. Also, continuous comments from parents from behind may have altered the children's honest responses, attempts were made to have a private conversation, but the locals were too keen on the activity to permit that. Any further attempts to visit the field post that was not possible because of rains in the area due to a cyclone.



Drawing activity with children

4 Schooling

4.1 Schools The Little Rann of Kutch

The schools in the Rann are set up each year when the salt farming season commences. The school infrastructure comprises of tents with a water tank, blackboard and a rag enclosure for the toilet. The teachers who are assigned to teach here are teachers from the nearby government school in Kharaghoda. All of these teachers live in the village (as they don't farm salt) and have to travel to the desert to teach in the Rann Shala. No one teacher is assigned to teach in the desert for the whole 8-9 months. Instead, the teachers change after a shift of 15 days. The school lacks necessary facilities of laboratories and library (despite the available portable libraries), there is a however reasonable amount of sports equipment (like cricket, football, volleyball, etc.) available during the

recess that lasts for a short duration of 15 to 20 minutes. Mid-day meal may be served at the school (which is transported from the village) though the parents did not acknowledge this claim.

The tent facility is not divided into classrooms. Instead, all the grades from one to eight are taught in a single tent by one teacher. According to the account of parents, the smaller classes are not educated and are allowed to play. The older grades are taught in shifts by the teacher, i.e., the teacher would teach third-grade students while students of other grades are expected to study on their own. The groups of students of different grades can be taught either on the blackboard, or the teacher may go to each group (segregated based on year of study) and teach the group individually. Functions and celebrations (like Republic day celebration) are held in the open desert outside the shala. Such functions may involve plays, poem recitations, etc. These are rarely truly inclusive and may only be done to satisfy the authorities. Also, due to the frequent change in teachers, the responsibility to organize the events is relayed. Some NGOs are involved to some extent in education, helping improve teacher accountability and occasional teaching via technology like tablet computers.

The initial attendance is less (around 20) as children haven't returned from vacation, not aware of the commencement of classes or the farming hasn't started yet. Due to the spread of awareness about the beginning of classes via the word of mouth or public presentations (like with a dhol) the attendance may increase to a maximum of around 30 comprising mainly kids from 6-8 grades. Education in the Rann is only available until eighth grade, after which the child must go to the nearby village to continue studying.

- Transport from Rann to the village is closed for 1-month post rain, making children lag. There are significant issues with syllabus completion, sometimes the answers to the examinations are intimidated to the students.
- Some teachers consume tobacco and may also send children to buy it for them.
- Agariya Hostel in Nav Kharaghoda, which could allow children to stay in the village and continue education have limited usage due to distance and emotional discomfort.

4.2 Government Primary school in Kharaghoda

The government school in the village Kharaghoda shares campus between grades due to the shortage of infrastructure. Grades between one and five are taught between 7 to 12 AM, while the remaining classes are taught from one to five PM. The number of teachers teaching in the village are sparse, When a given subject teacher is in Rann that subject is not taught in the village till their turn in rann ends.

Mid-day meals are served, which helps attract kids; in fact, some kids cite it as the primary reason for going to school. A Library is present in the village school which allows children to read and borrow books. Though a computer lab exists in the school, the computers in the lab are not in working condition.

4.3 Teacher's perspective

4.3.1 Rann Shala teachers

Since the Rann Shala is situated in the middle of the desert, travel to Rann is a significant problem for the teachers there. The difficulty seeing due to sandy winds and lack of navigation facilities in the region often forces the teacher to arrive late or leave the school early. The distance of Rann Shala from the village is enormous (around 60 km for one way commute). Working conditions and safety issues also concern the teachers. Teachers also complain of poor attendance in the Rann shala and lack of quality staff in schools.

5 Child labour

Salt farming often involves the entire family, including the children who also work in the salt farms. Children are most involved on the farm during the commencement and end of the farming season (due to increased workload at those times). The kind of work they do involves digging pans(pits), scraping the pan base and salt collection. This exposes them to injuries due to debris in the pits (like glass, thorns, etc.), health issues and has a severe impact on their education; ultimately impacting the opportunities available to them. This could be a major reason for poor attendance in schools.

6 Smartphone usage by children

The following section explains the usage of technology by the children.

6.1 Common apps and their usage

6.1.1 YouTube

Used to watch comedy, action, and sometimes educational content. Issues include ads, buffering, and English. Kids are aware of basic features, can operate without knowing how to read and often use audio search - also operated on io phone.

6.1.2 WhatsApp

Used for messaging, finds pleasure in checking what peers do via status. Issues include poor message deletion feature, less playful, and English. Kids are used to the app and use it frequently, knowledgeable of features like video calling.

6.1.3 Mobile games

Mobile games played include Racing, Ludo, PubG, Candy Crush, Fruit Ninja, Dog race, Hago. Many of these are multiplayer (like ludo), peer interactions are essential; kids rarely stay/play alone.

6.1.4 Study material

Kids don't often use mobiles for studies probably due to poor content, bad search results and lack of peer involvement

7 Previously introduced projects

- Gyan Kunj introduced smart classes, but lack of lecture preparation is a hurdle.
- Pragnya which showed that peer learning induces best results
- Arvind Gupta toys use playful methods to improve learning
- Teacher-generated e-content

Several of these successful projects involve simplicity and peer involvement.

8 Issues with existing child-oriented educational apps

Below are listed the issues that I observed in the existing educational applications.

- Lack of peer involvement

- Not a game - only a classroom simulation (things like points are analogous to grades)
- Repetitiveness
- The increased amount of text content
- Too many distractions in attempts to make it appealing (like colors, cartoons, animations, etc.)
- Loss of purpose of conveying educational material
- Unavailability in local language
- Too challenging or too simple
- Poor UI
- motivation (like commercial use)
- Poor funding for non-profits

9 Views of parents

This section briefs the Views of the parents

- Transport from Rann to the village is closed for one-month post rain, making children lag.
- The syllabus is not covered entirely in school.
- The child should be able to relate content to topics in books
- public communication skills due to lack of exposure in school.

- Focus on real learning via practicals is a priority in elementary school. However, school performance is still essential for confidence.
- Exposure to ill material
- Fear of unwanted costs/charges
- Financial issues
- Tech may lead to social isolation, may get spoilt, etc.
- Parents inability to pay attention to the childs study due to illiteracy and work (lack of direction)
- Young kids cant speak Hindi and English.

10 DIY projects and learning

Children enjoy the DIY project and state that they are a better way of learning. Some projects they do include dolls from cloth, cars from cardboard, a motor fan, cricket bat from wood, a study of seed germination, etc. However, the proper use of this is limited due to the issues with DIY activities

- Resource unavailability
- No one to teach
- A belief that they are too old for such projects
- School work and internet usage

11 Initial Proposal

Technology is widely available and is an excellent means of connectivity between educators and learners. Smartphones could serve as a guide and the user the learner and the teacher! With the help of a mobile application

that allows the user to find DIY activities by giving the app the list of local resources available to them. Use of local resources for DIY projects can improve the inclusion of DIY projects in the learning process. The use of DIY projects based on their curriculum and the locally available resources could help them learn better with the help of a little guidance.

11.1 Features

- Would be able to build projects with locally available resources.
- Using DIY activities and projects to learn new things with an easy to make an association with textbooks
- Peer learning involving physical movement and reduced screen time.
- Use of a mobile phone could make education available even when the school cant be accessed
- Serve as a platform to share and hear the ideas of friends.

11.2 Moving on in favour of a more impactful solution

The parents show concerns over the child’s overall development, lack of syllabus coverage, isolation, and behavioral issues, whereas the children require something enjoyable, includes peer involvement, and is easy to use. Something like the use of DIY projects for learning extends the experience to the real world and is a bit more balanced than entirely app-based approach. This could make peer learning achievable without forming an extensive dependence on the device.

However, this doesn’t address the issues faced directly by the children of salt farmers which include transportation problems, quality of teaching and teacher availability, lack of resources at the school, late commencement of classes, a combined classroom for multiple grades, frequent teacher rotation, low attendance, etc. Therefore, this needs a more problem-specific solution, that could address the schools at large for more significant impact.

12 Digital exclusion in Kutch

Hache and Cullen state that digital inclusion should be seen as a wagon to social inclusion that ensures individuals and disadvantaged groups have

access to ICTs and the skills to use them and are therefore able to participate in and benefit from an increasingly electronically mediated knowledge economy and information society.

The initial field visit was aimed at understanding the network profile and the prevalence of technology in a Village called Kharaghoda and parts of Little Rann of Kutch. A common observation was that there existed a digital divide that primarily excluded the old, physically challenged (may overlap with old age) and gender (where the girls have far more restricted access to technology within the same household compared to boys). Gender-based exclusion was evident from the fact that out of all the kids interviewed, the ones with least experience with technology were girls. Introducing ICT in Rann Shalas could help eliminate gender-based digital exclusion to some extent.

13 Proposal

The current status of education available to the children of salt farmers prevents knowledge to be disseminated effectively to the children in the desert. The education is a legal mandate that may take the form of pointless despair due to the lack of use of things taught in the school in their lives. The traditional teaching practices are highly ineffective to be directly deployed to teach in a one-room school system; the added incompetence of the teachers tend to worsen the situation. Parents and students may see education as a waste of time, time that they could instead spend working as labour. Education ends up becoming a worthless venture ultimately leading to a lousy reputation, high dropout rates and prevents any reduction in the involvement of children in the fields.

Such a problem not only requires involvement of community and government, but also requires long term planning. The proposal discussed below explains how the enrollment, attendance, and motivation in children may be given a boost without major policy modifications.

This approach (described below) is divided into two sections, content development, and presentation medium.

13.1 Educational content

The books and teaching methods currently in use lack a connection with the surroundings of the student, this approach does not aim to modify the textbooks or the teaching methods completely but instead focuses on the involvement of DIY activities in the existing curriculum to help bridge the gap between content and surroundings. Most books treat topics and subjects as independent units with minimal interconnection, which ignores

the concept of constructivism, which suggests that humans learn by constructing onto experiences and existing knowledge. The books used by the schools under the Gujarat board follow the NCERT book pattern, though these books are largely activity based, the concepts are rarely tied together. Inclusion of interesting activities that connect topics and subjects which at large connects the study to the student's immediate environment may improve thae state of schooling in Kutch.

Activities could be chosen that concerns students from various grades and also holds the potential to link multiple topics; these experiments need to be simple, exciting, and relevant to achieve the goal. Some examples for such experiments are listed below:

- A simple statement from chapter 4 on heat of seventh class science text-book, 'dark surfaces absorb and radiate more heat'. This basic observation derived from an experiment on how a plastic bottle with black paper wrapped around it ends up having hotter water than the bottle with white paper wrapped on it. This experiment could be the recurring one to explain an array of other concepts - allowing the student to build on past observations.

Like it could be used to understand the greenhouse effect, which could be extended to weather and climate on earth (chapter 7). Study of greenhouse brings up how heat loss due to convection is restricted (which extends the understanding of chapter on heat). This study leads to better understanding of Storms and cyclones (Chapter 8). Again, when buoyancy is discussed in class ninth, density and convection would make the concept easier to comprehend (Chapter 9, CLASS 9).

- A simple construction of corrugated structures from paper can help strongly establish the relationship between pressure and area. Such knowledge could also benefit the community.

13.2 Content presentation

The model of activities described above requires demonstration and someone to perform these experiments. This may m=not always be possible due to the reduced motivation of the teachers to conduct the activity, the frequent absence of the teacher, lack of know-how, etc. This could be solved with the deployment of technology. The approach is briefed below:

- Someone who resides in the vicinity of the school may be assigned responsibility to take care of the ICT technology. This person could be a student too. If the value of the service to the community is enhanced dramatically, then the concerns over device misuse, theft, neglect, etc. could be ignored as in such a case the community would not want to lose an asset of great significance.

- A local caretaker of the equipment could allow education to continue even when the teacher is frequently absent. This would reduce the dependence on an unreliable teacher. This is important for the motivation keep schooling stems from continuous progress in the school.

13.2.1 possible modes of presentation

- **Tablets** Tablets are designed for efficiency because of the low power requirements of their hardware components. In comparison, laptops use more powerful hardware. The battery component of the laptop is a far smaller percentage of the laptops internal components. Thus, even with the higher capacity battery of laptops, they do not run as long as a tablet. Tablets can achieve all day usage, which few laptops can accomplish. Tablets may be more cost effective, especially considering the efforts of the government to make tablets widely available. They also tend to show greater portability.
The lack of a keyboard restricts its usage for documentation purposes. The screen size is generally smaller than that of a desktop or laptop. Most tablets come with configurations that allow between 16 and 128 gigabytes of storage. By comparison, most laptops still use traditional hard drives that hold far much more. The average budget laptops come with a 500GB hard drive. Most tablets are based on extremely low powered processors; they will generally fall behind a laptop when it comes to computing tasksMultitasking or graphics performance it typically better suited with a laptop.
- **Smartphones** Smartphones offer a great deal of portability and are usually pocket size. The screen size of a smartphone is significantly lesser than that of a tablet or laptop, which is a significant issue for usage in the mass presentation of information. Tablets usually provide slightly better functionality than smartphones. Tablets are more extensive devices, so they tend to have bigger batteries than smartphones.
- **Desktop** Desktops tend to be cheaper than laptops for being able to achieve similar performance. Desktop processors are generally more extensive than that of laptops, allowing better performance. They have a larger screen size on average. Desktops could be upgraded and repaired with relative ease compared to other devices listed here. Laptops are very portable, something a desktop computer cant achieve. The overall size of the desktop is enormous and takes up plenty of space. The assembly of a desktop is more cumbersome. Desktop computers use more power than a laptop. They have to power a higher wattage power supply, multiple components inside the computer, and a monitor. If the power fluctuates or goes out, including brownouts, any documents being worked on and not saved can be lost.

- **Laptops** They perform better than smartphones and tend to be cheaper (for achieving similar functionality). They tend to be less intuitive than smartphones or tablets. They are more portable than desktops. They have a smaller power supply to be more mobile. This means that, in turn, they usually use less energy than a PC.

- 14 Future plans

I hope to test the concept in the field (preferably in the Rann) with the children. The content for the testing could be 'Arvind Gupta toys from trash' videos because of their superior quality and international recognition. Post the testing phase, the idea has to be incorporated with the GCERT, till that happens, the concept could be implemented on a small scale with the help of school teachers and the community. Since currently, the government school there uses old Gujarat board books and are yet to make the shift to NCERT, this project may aid this transition.

15 Conclusion

Schooling could be made useful, enjoyable, accessible to all children of a salt farming community in the desert by the use of ICT.